INCD- 00015

LEE'S LANDING MINING CO.

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DIVISION OF MINING &
SOLID WASTE MANAGEMENT
BL&WM

Solid Waste Incinerator

Engineering Report/Application

Scott Barnett, PE
6520 Juniper Bay Road
Conway, SC 29527
(843) 421-4151
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11/27/2012

Solid Waste Incineration

Technology Description

Table of Contents

1.0 SCDHEC Application for Permit to Construct a Solid Waste Management System Bureau of Land and Waste Management
(See Attachment A)

2.0 Introduction

2.1 General Process and Equipment Description

The incoming wood debris will be ground into mulch by the use of the grinder. A small percentage of the debris that is not able to be ground will be incinerated onsite by the Air Curtain Incinerator.

The air curtain incinerator operation is located on a 2.333 acre area of a larger tract of land owned by Howard Bellamy. This property is located just off of Hwy 90 on Lee's Landing Circle with address of 1343 Lee's Landing Circle, Conway, SC 29526.

The air curtain incinerator destructs land-clearing waste that is brought in from offsite properties. The wastes are trucked in over road to the staging area at the incinerator site. The incinerator is charged from materials from the staging area with a front end loader equipped with a stacking rake, which sifts out dirt and other fines from the wood waste prior to charging the unit. The size of each load is recorded.

This operation uses an Air Burner, a Wood Grinder and an excavator.

2.2 Service Area
All waste accepted by this facility is generated in Horry County. The population of Horry County was 269,291 in 2010 (US Census Bureau).

2.3 Description of Existing Site
(See Attachment E) The incinerator facility is located on a 2.333 acre area of a much larger tract owned by Howard Bellamy. The office building is located approximately 300' from the incinerator. The unit processing area consists of the unit, the wood waste staging area, and an ash storage area. An on-site mobile water tank is available with a 2 inch watering hose.

2.4 Description of Security Measures

The site is surrounded by natural woodland buffers which prevent unauthorized access. The entry into the property on the east side of the property is a gated entrance. Signage will be posted at this entrance as needed.

2.5 Location of Storage Areas

(See Attachment E) All wood waste storage piles are located at the incinerator site. A 50 feet area is maintained for incinerator to be located and for staging of the waste.

2.6 Disposal of Facility-Generated Waste

The ash residue will be placed in a sealed container and it will be used as a soil amendment and in the composting process on site or sold to other composting facilities. The ratio of ash residue in the composting process will be determined by the Clemson Extension through soil/ash analysis. Also see letter from Horry County Waste Authority.

2.7 Disposal of Facility-Generated Waste

The ash residue will be placed in a sealed container and it will be used as a soil amendment and in the composting process on site or sold to other composting facilities. The ratio of ash residue in the composting process will be determined by the Clemson Extension through soil/ash analysis. Any remaining residue not recycled or sold will be delivered to Horry County Landfill on Hwy 90 in Horry County, SC.

3.0 Engineering Report

3.1 Adjacent Land Use Map

(See Attachment E) The site map shows the layout of the proposed property as well as adjacent properties with TMS information.

3.2 Site Layout Drawing

(See Attachment E) This site plan shows the site boundaries as well as access roads for the facility.

3.3 Site Plan (See Attachment E) This site plan shows the site boundaries as well as access roads for the facility.

3.4 Measurement of Solid Waste

All waste is to be measured by container and in yd^3 (CY) units. Amount of incoming waste is measured and ticketed per load on a daily basis. A daily total can be easily obtained by simply totaling these quantities on a per day, per week, per month, or per year basis.

3.5 Storage/Staging Areas

Wood waste is brought into the staging area and off loaded into the 3 windrows as shown on Attachment E. At this time of off-loading, the waste is evaluated for any material that is not able to be processed at this site and is separated. Then the waste is inserted into the incinerator and processed. Once finished the ash is removed and stocked and then eventually disposed of at Horry County Waste location.

3.6 Engineering plans for incinerator

Engineering plans and specifications for the incinerator are provided by the manufacturer and are included in this report as Attachment F.

4.0 Personnel Training Program

All incinerator operators receive a 1-day, eight hour training course in the safe and efficient operation of the unit. Operators are also trained to operate the unit within set parameters. The training material used in the 1-day course is the Operations and Maintenance Training Manual. A copy of this manual will be kept in the office at all times. A complete copy of the Incinerator Operation and Maintenance manual is attached and labeled as Attachment G.

5.0 Ash Management Plan

Ash removal will be required periodically. When ash build-up reaches approximately 25-30% of the incinerator volume (1/4 – 1/3 full) the incinerator should be cooled to ambient conditions. The ash is then drenched with water and removed from the unit with a front-end loader or excavator. Care should be taken to insure that the ash is fully extinguished prior to removal from the unit. The loader is used to mix the ash in with

the grubbings pile located at the staging area. The ash is also suitable for burial in landfills.

6.0 Quality Assurance and Quality Control

The site only will accept the posted wood types. Only solid waste approved by the Department will be accepted at the facility. Additionally, all incoming loads are inspected prior to acceptance for off-loading at the staging areas. Any loads containing unapproved solid waste is rejected unless the unacceptable materials can be removed for off-site disposal. These materials are also inspected as they are off-loaded at the staging area.

7.0 Contingency Plan

The purpose of this section is to document a plan to minimize the hazard to human health and safety and to the environment if a major fire, explosion, accident, natural disaster, unplanned sudden or non-sudden releases of hazardous constituents to air, soil, or surface water; or other incident should occur at the facility. For incidents of a magnitude beyond the operator's ability and training, Horry County's Director of Emergency Services will have full authority as Emergency Response Coordinator.

7.1 Emergency Response Coordinator

Mr. Shannon Bell
Lee's Landing Mining Co.
1343 Lee's Landing Circle
Conway, SC 29526
Office (843) 458-5363

7.2 Alt. Emergency Response Coordinator

Mr. Archie Bell
Lee's Landing Mining Co.
1343 Lee's Landing Circle
Conway, SC 29526

7.3 Emergency Response Team

The persons indicated in 7.1 and 7.2 above will be the Emergency Response Team for the facility. In the event of a major fire, accident, or natural disaster, the incinerator operator's response will be

knowledgeable of these contingency plans and Emergency Procedures.

7.4 Responsibilities of the Emergency Response Coordinator

7.4.1 The Emergency Response Coordinator (ERC) will comply with the requirements of this document whenever there is an imminent or actual emergency involving a major fire, accident, or natural disaster. He will be knowledgeable of these Contingency Plans and Emergency Procedures.

7.4.2 The ERC will determine the character, location, and magnitude of the emergency. He will identify the area(s)/materials involved.. He will determine if there are injuries requiring medical attention. He will assess the possible hazards to human health and the environment from the incident.

7.4.3 The ERC will notify the appropriate local authorities. The following list will be kept current and posted at all telephone locations:

EMERGENCY MANAGEMENT
Horry County Emergency Management
2560 North Main Street
Conway, SC 29526
Phone: 911

7.4.4 If the assessment indicates it may be desirable to evacuate surrounding areas, the ERC will immediately notify local authorities and will be available to assist officials in the decision making.

7.4.5 The ERC will immediately notify SCDHEC at the 24-hour number (803) 253-6488. The incident will be noted in the operating record and the annual report to include the date, time, and details of the incident. Upon request, a written report will be submitted to the department. The report must include the following:

(1) The name and phone number of the operator

(2) Name and address of the facility
(3) Date, time and type of incident
(4) Types and quantity of material involved
(5) Extent of injuries, if any
(6) Assessment of actual or potential hazard to human health or the environment, if applicable
(7) The estimated quantity and disposal of the solid waste, liquids, or material recovered that resulted from the incident
(8) The procedures or equipment available to prevent a recurrence of the reported incident

7.4.6 The ERC will direct efforts to contain the incident and minimize the effect. Special attention should be given to preventing the occurrence of fires or release of waste materials from the facility. All reasonable efforts will be taken including the shutdown of part or all of the facility.

7.4.7 The ERC will direct the efforts of the Emergency Response Team but will relinquish control to the Fire Department or other qualified personnel as appropriate. (The fire department will be invited to inspect and familiarize itself with the facilities on a periodic basis.)

7.4.8 The ERC will direct the clean-up. All clean-up will be conducted in accordance with local, state, and federal regulations. Special considerations will be given to safety and the protection of the environment.

7.4.9 The ERC will ensure that all equipment used in the emergency is cleaned and fit for its intended use before operations are resumed.

7.4.10 The ERC will notify SCDHEC and local authorities that the facility is in compliance and that all clean-up and disposal procedures have been completed before operations are resumed in the affected areas.

7.5 Emergency Equipment

The facility will maintain portable phones, and/or radios, and pagers in at least two locations as a means of communication for both on and off site. Additionally, the following equipment will be maintained for use in emergency situations.

7.5.1 Hand tools including pliers, screwdrivers, crescent wrenches, vise grips, tin snips, wire cutters, shovels, rakes, and hoes.

7.5.2 Safety supplies including safety glasses, hard hat, rubber gloves, boots, and spare fire extinguishers.

7.5.3 Empty 55-gallon steel drums for use as containers.

7.6 Training

Each employee will receive instruction on the Contingency Plan including the Emergency Response section of the plan. He will know the location of the Contingency Plan and how to activate it. He will be trained as to his or her role in an emergency situation. In general, if the incident is a major fire, accident, or natural disaster, the employee's response will be to notify the Emergency Response Coordinator and to secure the facility. The employee will be trained in the proper use, maintenance and limitations of personal protective equipment. The employee will be trained in the use of other applicable safety requirements.

7.7 Natural Disasters

If threatened by a tornado, hurricane, or other severe natural disaster and time permits, the Emergency Response Coordinator should be contacted for instructions. If time does not permit, shut down procedures should be immediately implemented. The facility should be secured by closing all gates and doors. Employees should then assemble at a pre-designated area.

8.0 General Operating Plan

Note that operational and maintenance procedures are detailed in the Operations and Maintenance Training Manual

8.1 General Process Description

Wood waste is trucked to the facility and inspected per previous sections. The wood waste is brought to the staging area and offloaded per previous section. The wood waste is incinerated with a McPherson MD-30 Air Curtain Incinerator. A Cummings 4B diesel engine drives a fan, which in turn creates an air curtain by forcing air through a plenum and nozzle. This high velocity air travels across the top of the pit in which a fire has been started.

The air curtain traps smoke and small particles and recirculates them to enhance combustion and reduce smoke. The very large volume of air accelerates combustion and provides for high pit temperatures between 1800 degrees Fahrenheit and 2200 degrees Fahrenheit. The refractory pit provides a safe combustion chamber. Specially designed refractory panels prevent excess heat from escaping.

The incinerator unit is charged with materials from the staging area with a John Deere 200LC front end loader which is equipped with a stacking rake which sifts out dirt and other fines from the wood wastes prior to charging the unit.

On-site storage of materials is kept to a minimum; and, except as otherwise noted, is burned within one week. Good management practices to prevent fire in the staging area are followed including keeping access to the stockpiles clear and maintaining an adequate on-site supply of water.

8.2 Operating Parameters and Capacities

Incinerator operational hours are flexible and depend on the company's work load. Average hours of operation are 8 hours a day, five days per week, 50 weeks per year. The maximum rated burn capacity of the unit is 12 tons per hour.

8.3 Origin, Composition, and Measure of Wood Waste

Only natural, untreated wood wastes are accepted for incineration at the facility. Wood wastes consist of debris from land-clearing as well as landscaping wastes that include such things as limbs and prunings.

9.0 Nuisance Abatement

9.1 Dust Control - The facility will control dust by maintaining proper buffers and vegetation. Also the site manager will monitor dust on roadways and apply non-potable water to roadways when necessary as well as grading the roadways.

9.2 Odor Control - Grinding wood has little to no odor. Mulch will be removed as soon as possible to prevent odor. Should by chance, odor become a problem the facility will alleviate the problem by manipulating the wind row sizes to allow penetration of oxygen. We will also maintain a grinding site that is free from standing water.

9.3 Vector Control - No food products as only land clearing debris will be accepted on this site. This will help control rodents, flies and mosquitoes. If rodents do become a problem, traps will be strategically placed around the site or an exterminator will be contacted.

9.4 Noise Control - Noise will be controlled by buffers and/or natural/planted vegetation wherever necessary and via the berms along the property lines. The site manager will also maintain proper mufflers on all equipment.

9.5 Litter Control - The inspector will inspect all incoming waste material and will separate any material that is not land clearing debris and placed in a container to be disposed of at the Horry County Land Fill.

10.0 Closure Plan

In the event the incinerator should close, the following procedures will be followed:

10.1 The Department will be provided with written notice of intent to close facility within sixty (60) days prior to closure. The notice will include the proposed closure date.

10.2 Closure signs will be posted at the facility immediately upon closing.

10.3 The final quantity of wood waste will be received no less than 30 days prior to the closure date. Within thirty (30) days after receiving the final quantity of wood waste, all wood waste will be removed, and the waste handling areas will be cleaned. The staging area will be graded to promote positive drainage, and seeded as required. All ash residue will be beneficially used as a soil amendment or removed from the site and properly disposed in a permitted landfill, as required.

10.4 The incinerator unit will be cleaned of all residue ash and secured. There will be no runoff or discharge of waste water from incinerator cleaning. Only a small amount of water is added to the ash residue to control ash particles from becoming airborne. The diesel drive unit will be locked and tagged out so that it cannot be operated. Alternately, the incinerator unit may be removed from site. As only natural, untreated wood waste is accepted at the facility for incineration, the process will not generate contaminated residuals and/or contaminated soil which would require managing upon the closure of the facility. Therefore; no post-closure care will be required for the facility.

10.5 After closure operations have been completed, a request for Department inspection and approval of closure will be made.

11.0 Demonstration of Financial Responsibility

11.1 Third Party Closure Costs

The following is an estimation of the cost to close the facility by a third party. The cost estimate is based on the cost of a third party contractor to process the maximum amount of wood waste that the facility would have on-site at any given time based upon the current maximum rate of waste receipts at the facility.

Maximum incoming wood waste volume:

3 rows x (30' wide x 10' high x 100' long) / 2 = 45,000ft^3 = 1,667 CY

Thus 1,667 CY x $6.00/CY processing costs = $10,002

12.0 Waste Control Plan

12.1 Waste Approval Procedures

Only natural, untreated wood wastes are accepted for incineration at the facility. Any loads containing any material other than natural wood waste is not approved for acceptance at the facility. Currently, the facility only accepts land-clearing debris from site work contractors and landscapers. No lumber or manufactured wood products are currently incinerated.

12.2 Waste Screening Procedures

Land-clearing debris is inspected by Lees Landing Mining personnel as it is being unloaded. A sign will be posted at the gates stating "Only land-clearing wastes accepted". Any loads containing unacceptable materials is immediately rejected and turned from the facility unless the unacceptable material can be removed by the hauler/generator for offsite disposal prior to off-loading. Additionally, all incoming loads are also inspected as they are off-loaded at the staging area. The generator is responsible for the immediate removal and disposal of any unapproved materials discovered in the loads. Any unapproved materials discovered in loads are handled per section below.

12.3 Handling, Storage, and Disposal of Unauthorized Wastes

In the event that any unauthorized wastes are not discovered during waste screening procedures per previous section, and are received at the facility the following procedures will be followed:

Any unauthorized waste discovered during the waste handling procedures for charging the incinerator unit, will be removed and segregated in a designated location at the staging area. All wastes unauthorized for incineration will be disposed in a permitted landfill. Any putrescible wastes will be containerized and removed from the facility for disposal within seventy-two (72) hours of receipt. Non-putrescible unauthorized wasted will be removed from the facility for disposal within one week.

In the unlikely event that nay hazardous, medical, or infectious wastes are discovered, the Emergency Response Coordinator (ERC) will immediately notify SCDHEC at the 24-hour number (803) 253-

6488. The proper handling, storage, and disposal of such wastes will be dependent upon the nature of the wastes and upon directives from the Department. The Contingency Plan will be implemented, if required.

12.4 Waste Handling Documentation

A daily logbook will be kept of all incoming wastes. A logbook entry will be made for each incoming load. Each logbook entry will contain:

(A) Date, time and source of load

(B) Description of wastes (landscaping, limbs, stumps, hardwoods, etc.)

(C) Load accepted or rejected and reasoning

Entries in the logbook will be made for any unauthorized waste discovered per section above. Each entry shall contain:

(A) Date and time of discovery

(B) Type and unauthorized waste

(C) Description of removal and segregation

(D) Date, time, and location of landfill disposal and landfill ticket/manifest number

(E) Record of SCDHEC contact for any hazardous, medical, or infectious waste discovered per section above.

Incineration amount records are recorded in a separate logbook per section above. All records will be kept on-site for a period of at least five (5) years.

13.0 Design Requirements

13.1 The incinerator is located adjacent to an all-weather road capable of handling anticipated loads limits.

13.2 The incinerator is not located within the 100 year floodplain.

13.3 The active waste handling area in not located within 500 feet of any surface water. The areas designated as water (lakes) are permitted sand borrow pits for excavation.

13.4 The active waste handling area is not located within 100 feet of a drinking water well.

13.5 The site location allows for sufficient room for safe operation and to minimize traffic congestion.

13.6 The incinerator unit is not within 100 feet of any property line.

13.7 The active waste handling area is not located within 500 feet of any residences, schools, day-care centers, hospitals, or recreational parks.

13.8 The incineration facility adheres to all Federal and State rules and regulations and all local zoning, land use, and other applicable local ordinances. A letter demonstrating that the incinerator unit meets Horry County zoning requirements is located in this report. (See Attachment A)

13.9 The incineration facility complies with the U.S. Army Corps of Engineers and U.S.E.P.A. requirements concerning wetlands. (See Attachment B, The Brigman Company)

13.10 The facility will maintain portable fire extinguishers on the front end loader and at the incinerator unit. Spill control equipment includes a front end loader, shovels, hoes, rakes, and 55-gallon steel drum containers.

13.11 An on-site water supply for firefighting and to quench the ash is provided by a 500 gallon portable water tank with a 2" discharge hose.

14.0 Disclosure Statement

Shannon Bell of Lee's Landing Mining Co. at 1343 Lee's Landing Circle Conway, SC is the responsible party of this facility. He has had several years' experience with the operation of such a facility. He has had no convictions or judgments of any kind with reference to this project.

15.0 Proof of Ownership/Control of Property

See "Attachment C"

Attachment A

D H E C
PROMOTE PROTECT PROSPER

Application for Permit to Construct a Solid Waste Management System
Bureau of Land and Waste Management

Submit to: Division of Mining and Solid Waste Permitting, Bureau of Land and Waste Management
SC Department of Health and Environmental Control, 2600 Bull Street, Columbia, SC 29201-1708
(Please Print or Type)

I. Name of project: Lee Landing Mine

II. Physical location (Directions to project - use street names, county road numbers, etc.): 1343 Lees Landing Circle Conway S.C. 29526 County: Horry

Latitude and longitude (nearest 15 seconds) or UTM coordinates: 33 49 30.20 N 78 59 24.89 W

III. In accordance with Title 44, Chapter 96 of the Code of Laws of South Carolina, 1976, as amended, I hereby make application, on behalf of the party(ies) whose name(s) appears below, for a permit to construct and operate the following type of solid waste management project (describe): Shannon Bell C

IV. Facility name, mailing address: Lee Landing Mine 1343 Lees Landing Circle Telephone number: 843-458-5363

V. Operator's name, mailing address (if different from name of facility owner): Shannon Bell
Po Box 249 Aynor SC 29544 Telephone number: 843-458-5363

VI. Landowner's name, mailing address (if different from name of facility or operator): Howard Bellamy
101 Folly Rd Myrtle Beach SC. 29578 Telephone number: 843-450-6859

VII. I have placed my signature and seal upon the documents submitted with this application signifying that I accept responsibility for the information and/or design contained therein. Additional submittals where required will also bear my signature and seal, signifying that I accept responsibility for the information and/or design contained therein.

Engineer's name (print): Thomas Scott Barnett Signature: Scott Barnett
Registered Professional Engineer

S.C. Registration No: 23847

VIII. I have read this application and all attached documents. I agree to the requirements and conditions that are contained in it. Also, I agree to the admission of properly authorized persons at all reasonable hours for the purpose of sampling and inspection.

Name of Facility Representative (print): Shannon Bell Signature: Shannon Bell

Facility Representative's title: Owner / Operator Date: 7/11/2012

Name of Operator Representative (print): Signature:
(If different from facility representative)

Operator Representative's title: Date: 7/11/2012

Name of Landowner (print): Howard Bellamy Signature: Howard Bellamy
(if different from facility or operator representative)

Date: 7/11/2012

Attachment B

the BRIGMAN COMPANY
wetland consulting · forest management

February 10, 2011

Shannon Bell
3268 Huckleberry Road
Aynor, SC 29544

RE: **Lee's Landing Mine Construction Area (6.425 +/- acres)**
Horry County, South Carolina

Dear Mr. Bell:

We have completed a site examination of the referenced property in order to provide a professional opinion, based on the physical evidence, to determine the extent of any 404 wetlands on the project study area and the depth to groundwater on three locations distributed throughout the demarcated construction area in Horry County, South Carolina.

Based on a review of aerial photography, USGS topographic map, USDA-SCS soil survey data, and a thorough field examination, we have determined that the project area contains evidence of historic and recent active mining activity with unnatural soil strata and unconsolidated fill material throughout the extent of the construction area. Due to the current state of the construction area, none of these areas are considered subject to the jurisdiction of the U.S. Army Corps of Engineers. Additionally, three soil boring sites were evaluated for groundwater within the top 24 inches of the soil surface and no groundwater was observed. Locations of the soil borings and the construction area is represented graphically on the attached sketch prepared by Barry Suggs of Crescent Land Surveying.

Disclaimer: Potential wetland/non-wetland areas depicted here have not been verified by the U.S. Army Corps of Engineers. Our findings have been developed in accordance with generally accepted standards of practice in the Charleston District of the United States Army Corps of Engineers. No other warranty is expressed or implied. Please be aware that the United States Army Corps of Engineers is the sole authority responsible for certifying the presence or absence of jurisdictional wetlands and future changes in their regulations/guidelines may affect the findings represented in this letter. Any areas depicted as jurisdictional wetlands on preliminary wetland determinations are protected and regulated by the U.S. Army Corps of Engineers with a physical, chemical, and/or biological connection to the receiving waters downstream. As stated in the Clean Water Act of 1972, a Department of the Army permit is required for placement of dredged or fill material in a Navigable Water of the United States, in a federally-defined freshwater wetland, or other Waters of the United States.

We appreciate the opportunity to be of service to you by conducting a preliminary wetland assessment and groundwater examination of the above referenced site. Should you have any questions or if we can be of any further assistance, please contact us.

Sincerely,

Jeff Burleson
Wetland Ecologist

Attachment

M:Jobs\Pending\2012\shannon bell\opinion letter.doc

Attachment C

STATE OF SOUTH CAROLINA,

COUNTY OF Horry

This lease, made and concluded by Indenture, between Howard Bellamy

of 101 Fobby Rd. Myrtle Beach SC 29576, hereinafter called Lessor; and Shannon Bell

of 3266 Huckleberry Rd Galivants Ferry SC, hereinafter called Lessee:

WITNESSES AND SHOWS:

The lessor hereby leases unto the lessee all that certain premises as now existing and being, to wit:

Property identified by tax map number 136-00-02-063
For the purpose of A Solid Waste & Con. Useage
Mailing address 1343 Lee's Landing Circle

TO HAVE AND TO HOLD FOR THE FULL TERM OF 10 years beginning on the 11th day of July, 2012, and ending on the 11th day of July, 2022; the lessee, yielding and paying therefor the rent, at the rate of two hundred dollars no/100 ($200.00) dollars, per calendar month, payable in advance on the first day of each calendar month hereafter until the end of the term hereunder.

And the lessee for and in consideration of the above letten premises, hereby covenants and agrees to pay the said rent in the manner herein required. It is hereby agreed that the holding hereunder shall be ended at the expiration of the term provided for and shall not become a leasehold from year to year.

The destruction of the premises by fire shall terminate said term. The lessee shall make no repairs at the expense of the lessor. Any alteration or improvements desired by the lessee, at his own expense, must be done under the written sanction of the lessor, and all such alterations or improvements shall be surrendered to the Lessor upon the Lessee's removal without cost, charge or deduction therefor. The Lessee covenants to make good all breakage of glass, and all other injuries done to the premises during his tenancy, excepting such as are produced by natural decay and unavoidable causes. The Lessee shall not convey this lease, or underlet the premises without the written consent of the Lessor.

It is further stipulated that if the rent shall at any time be in arrear and unpaid for the space of ten (10) days, the Lessor shall have the right to annul and terminate the lease; and it shall be lawful for Lessor to re-enter and forthwith repossess all and singular the granted and leased premises, without hindrance or prejudice to his right to distrain for the rent, and without prejudice to any other right under the laws and statutes.

The term lessor, and also the term lessee, wherever used in this instrument shall have a plural meaning wherever the context so indicates; and each of these terms shall be construed to cover, take in, and bind, his, her, or their heirs, executors, administrators or assigns, in the case of private individual or individuals, and shall take in, cover and bind the successors and assigns in case of corporations; just the same as if these additional terms had been printed or written herein at each of the places where indicated or required.

In witness whereof, the said parties have ... 11th

COUNTY OF Horry

Personally appeared before me, The undersigned witness

and made oath that he saw the within named

Howard Bellamy and Shannon Bell

Sign, Seal and as their Act and Deed deliver the within written Lease; and that he with The Other Undersigned Witness

witnessed the execution thereof.

Sworn to before me this 11th

day of July, A. D. 2012

Mary C Johnson

Notary Public for South Carolina. (L. S.)

My Commission

Expires: August 12, 2015

STATE OF SOUTH CAROLINA

COUNTY OF

— TO —

LEASE

Attachment D

PLANNING & ZONING DEPT
1301 2nd Avenue Room 1 D 09
Conway, SC 29526

Phone: (843) 915-5340
Fax: (843) 915-6340

March 15, 2011

Shannon Bell
P. O. Box 249
Aynor, SC 29511

Re: TMS# 138-00-02-063 (5.98 acre portion only)
Recycling/Incinerator

To Whom It May Concern:

This is to confirm that a 5.98 acre portion of the property identified by tax map number 138-00-02-063 is currently zoned MA2 (General Manufacturing and Industrial District) on the Horry County Zoning Maps. (map attached)

The referenced site is subject to the requirements as outlined in Article VII, Section 738 of the Horry County Zoning Ordinance. Any additional use/s on the site or change of use must be reviewed for compliance with the current zoning requirements and all other applicable county requirements in affect at that time.

If I may be of further assistance, please advise.

Sincerely,

Rennie Mincey
Zoning Administrator

MA1 Districts are intended to act as a buffer or transition between commercial business districts and heavier manufacturing and industrial districts or to provide for planned industrial parks located in close proximity to residential areas.

737.1. Permitted uses.

	Primary Use Type	*Specific Business Types (as defined in the Standard Industrial Classification Code (SIC)*
(A)	Accessory uses that are subordinate and incidental to any permitted use below and on-site signage in accordance to the provisions of Article 10.	
(B)	Any use permitted in the PA1 District	
(C)	Automobile body shop, painting, or upholstering	
(D)	Automobile storage (licensed vehicles only)	
(E)	Businesses engaged in manufacturing/ processing of foods and beverages for humans or animals	All business types defined in SIC 20
(F)	Fabricated metal products, except machinery & transportation equipment	All business types defined in SIC 34
(G)	Pool service companies	
(H)	Precision instrument manufacturing	All business types defined in SIC 38
(I)	Printing, publishing, & allied industries	All business types defined in SIC 27
(J)	Wholesale business outlets, mini-storage & warehousing, and trade shops	
(K)	Apparel & other finished product manufacturers	All business types defined in SIC 23

(Ord. No. 138-04, § 2(Att. 1), 2-1-05)

738. General Manufacturing and Industrial District (MA2).

Intent. The General Manufacturing and Industrial (MA2) District is intended to meet the general industrial and manufacturing needs of Horry County by providing for uses that may require open-air storage of equipment, materials, and products. MA2 Districts are not intended for locations in close proximity to residential areas, and are not intended to directly abut commercial business districts.

738.1 Permitted Uses.

	Primary Use Type	*Specific Business Types (as defined in the Standard Industrial Classification Code (SIC)*
(A)	Accessory uses that are subordinate and incidental to any permitted use below and on-site signage in accordance to the provisions of Article 10.	
(B)	Any uses permitted in the MA1 District	
(C)	Automobile storage (unlicensed vehicles permitted)	
(D)	Fabricated metal products, except machinery & transportation equipment	All business types defined in SIC 34
(E)	Furniture and fixture manufactures	All business types defined in SIC 25
(F)	Heavy equipment sales & rental	
(G)	Industrial & commercial machinery manufactures	All business types defined in SIC 35
(H)	Leather & leather product manufactures	All business types defined in SIC 31
(I)	Lumber and wood product manufactures	All business types defined in SIC 24
(J)	Paper & allied product manufactures	All business types defined in SIC 26
(K)	Petroleum and petroleum products; except asphalt batch facilities	Business types defined in SIC 5171 & 5172
(L)	Precision instrument manufacturing	All business types defined in SIC 38
(M)	Salvage yards	
(N)	Scrap metal processors	
(O)	Stone, clay & glass product manufactures; except concrete batch plants	All business types defined in SIC 32
(P)	Tobacco product manufactures	All business types defined in SIC 21
(Q)	Truck terminals	
(R)	Warehouses	
(S)	Wholesale distribution facilities (durable & non-durable goods)	All business types defined in SIC 50 & 51

(Ord. No. 138-04, § 2(Att. 1), 2-1-05)

739. Heavy/Intense Manufacturing and Industrial District (MA3).

Intent. The Heavy/Intense Manufacturing and Industrial (MA3) District is intended for the heaviest manufacturing and industrial uses, involving the use, handling, and storage of hazardous materials, or industrial uses which require a substantial amount of open-air storage area.

Horry County Solid Waste Authority, Inc.

'Protecting Tomorrow's Environment Today'

Danny J. Hardee
Chairman

James H. Cokley, D.Min.
Vice-Chairman

Basem E. Hilal
Secretary

M. Lance Thompson
Treasurer

J. Michael Campbell

Dan P. Gray

John R. Long, II

Danny Knight
Executive Director

Post Office Box 1664
Conway, South Carolina
29528-1664
Tel: 843-347-1651
Fax: 843-347-3653

Printed on Recycled Paper

November 21, 2012

Mr. Justin Koon.
South Carolina Department of Health & Environmental Control
Solid Waste Permitting
2600 Bull Street
Columbia, South Carolina 29201

RE: Lee's Landing Mine

Dear Mr. Koon:

Per my phone conversations with Mr. Archie Bell and Mr. Shannon Bell along with a subsequent email the Horry County Solid Waste Authority will accept the burned, natural state, land clearing debris ash from the Lee's Landing Mine facility located at 1343 Lee's Landing Circle, Conway, SC. This material will be disposed of in the Class III Landfill at a disposal rate of $29.00 per ton.

Please contact me should you have any questions or concerns.

Regards,

Stephanie J. Todd

Stephanie J. Todd
Horry County Solid Waste Authority, Inc.
Manager, Property & Environmental Services

Cc: Central Files, HCSWA

Horry County Fire/Rescue

2560 NORTH MAIN STREET
CONWAY, SC 29526-3756
(843) 915-5190
FAX: (843) 248-1695

To Whom It May Concern,

This is to certify that the address of 1343 Lees Landing Cir (Proposed Wood Chipping Site) in Conway, SC 29526 is in the coverage area of Horry County Fire/Rescue Station 43(Lees Landing). This means that if any incident takes place at this address Station 43will be the first to be called to respond. This is a career station so it is manned full time. The station has a calculated distance of 2.2 miles from this address. As of July 1, 2008 all area covered by HCFR has an ISO Class of 5 for all areas within 5 miles of an HCFR station.

If you have questions please call our administrative offices to get more information if needed.

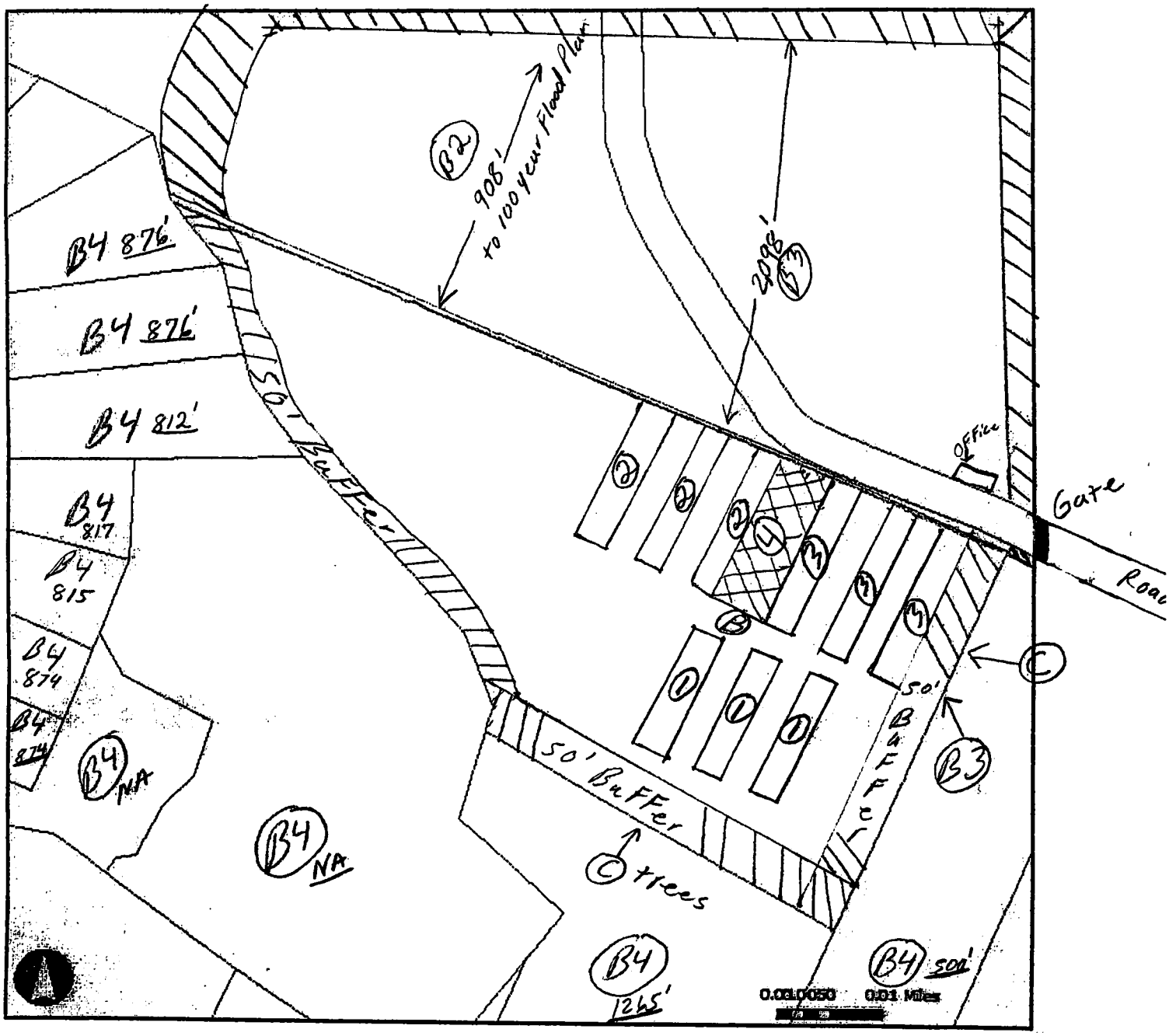
Sincerely,

Michael Hodge
RMS/GIS Coordinator
Horry County Fire/Rescue

Attachment E

12,50 total

Map



Highways

Limited Access Highways

Highways

Major Roads

Roads

Parcels

County Boundary

1/16 = 8 Ft

(1) Composting wind rows

(2) Incoming wood waste area

(3) Out going wood product area

(4) Wood grinding equipment area

B6 No well city water

C Their is a natural barrier around Site

(B) 40' Between (1) + (4)

B1 1201' to wetlands + 287' to wat

B2 908' to 100 year Flood Plan

B3 50' Buffer From property line

B4 500' From residences

B5 3731' From River or Streams

Attachment F

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PROMOTE PROTECT PROSPER
South Carolina Department of Health and Environmental Control
2600 Bull Street, Columbia, SC 29201
Phone: 803-898-4123 Fax: 803-898-4079

ENGINEERING CALCULATION SHEET
BAQ Engineering Services Division

PROJECT/PROPOSAL NAME:	High Tech Recycling, LLC	PERMIT WRITER:	Dwight Mooney
LOCATION (STREET, CITY):	1343 Lee's Landing, Conway		
PERMIT NUMBER:	CM-1340-0112	DATE: 3/15/05	Page 1 of 1
SIC/NAICS CODE(S):	4953/562219		

DATE APPLICATION RECEIVED: 03/01/2005

FACILITY DESCRIPTION
High Tech Recycling, LLC is a recycling business located on Mill Pond Rd. in Socastee. The facility has a construction permit (1340-0112-CA) to operate limiting the air curtain incinerator to 9,600 TPY and a 22 TPY wood grinder. In order to avoid PSD the air curtain incinerator will have to take federal enforceable limits less than 100 TPY for any criteria pollutants and be a conditional major. The previous 9,600 TPY limit does not meet all the federal enforceable limits for PM; therefore, a new limit of less than 100 TPY will replace the existing limit listed in the construction permit.

DATE OF LAST INSPECTION: 12/23/03, no violations noted.

PROJECT DESCRIPTION
The facility requested a location change for the 12 TPH natural wood waste air curtain incinerator ID 01 from the previous location of Mill Pond Rd to 1343 Lee's Landing Road. The county location has not changed and modeling does not need to be redone. The original modeling was completed based on a 500ft circumference around the air curtain incinerator and the same boundary will be kept at the new site. Based on the property boundary information Denise Hall of the modeling group stated that modeling did not have to be recalculated. The facility is also requesting that their wood grinder ID 02 be removed from the operating permit. This unit was sold and is no longer located at the site.

SOURCE DESCRIPTION

OP/CP ID	Equip ID	Equipment Description	Installation Date	Modification Date	Control Device ID	Stack ID
01/CA	01	12 Ton Per Hour Natural Wood Waste Air Curtain Incinerator	May 2002	-	-	-
02/CA (VOID)	02	22 Ton Per Hour Wood Grinder with a 2.25 x 10^6 BTU/Hr Diesel Engine	May 2002	2005	-	-

CONTROL EQUIPMENT
No control equipment is associated with ID –01. The fan blower is integral to the process.

EXEMPT SOURCE/INSIGNIFICANT ACTIVITIES DESCRIPTION

Equip ID	Source Description (Date Listed)	Basis
-	0.2 x 10^6 BTU/Hr Diesel Engine 0.2 x 10^6 BTU/Hr Diesel Engine Used to Power Fan Motor on Air Curtain Incinerator	SC Regulation 62.1 Section II Part F, 2 (e)(g)

EMISSIONS

UNCONTROLLED POTENTIAL EMISSIONS				
ID	Pollutant	lb/hr	TPY@ 8,760 hours	Method for Estimating Emissions
01	PM	156	683.28	*AP-42, Chapter 2, Table 2.1-12
01	PM_{10}	59.28	259.65	1. SCC Codes (fire factor) 5-03-001-06 and 5-01-005-10
01	SO_2	1.2	5.26	*AP-42, Chapter 2, Table 2.1-12
01	NO_x	48	210.24	*AP-42, Chapter 2, Table 2.1-12
01	CO	-	-	The factor in both AP-42 and the SC Fire Code are none existent.
01	VOC's	-	-	The factor in both AP-42 and the SC Fire Code are none existent.

* Factors are as follows: 13.0 lb/ton for PM, 4.94 for PM_{10}, 0.1 lb/ton for SO_2, and 4.0 lb/ton for NO_x. The factor used for PM_{10} is given in the SC Fire mission factor. The AP-42 factors are the same as the SC Fire emission factors for all the Pollutants
ote: Factors for VOC's and CO are not available and are not considered in the emission calculations.

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ENGINEERING CALCULATION SHEET
BAQ Engineering Services Division

PROJECT/PROPOSAL NAME:	High Tech Recycling, LLC	PERMIT WRITER:	Dwight Mooney
LOCATION (STREET, CITY):	1343 Lee's Landing, Conway		
PERMIT NUMBER:	CM-1340-0112	DATE: 3/15/05	Page 2 of 2
SIC/NAICS CODE(S):	4953/562219		

Distillate (#2) Oil Fired (< 10 mmbtu/hr)			PM	PM_{10}	SO_2	NO_x	CO	VOC
10^6 BTU / Hr [Size]: 2.25	BTU/Gal: 140000	Lb/10^3 Gal:	3.3	2.38	71	20	5	0.34
Hours/Year: 8760	% Sulfur: 0.5	Lb/Hr:	0.0530	0.0383	1.1411	0.3214	0.0804	0.0055
Source: AP-42 5th Ed, Tables 1.3-1,-2,-3,-7 9/98 Update		TPY:	0.23	0.17	5.00	1.41	0.35	0.02

MAXIMUM ACTUAL or CONTROLLED POTENTIAL EMISSIONS

ID	Pollutant	lb/hr	*TPY	Method for Estimating Emissions
01	PM	156	< 100 TPY	With Conditional Major Limits
01	PM_{10}	59.28	< 100 TPY	With Conditional Major Limits
01	SO_2	1.2	< 5.26TPY	With Conditional Major Limits
01	NO_x	48	< 100 TPY	With Conditional Major Limits
01	CO	-	-	The factor in both AP-42 and the SC Fire Code are none existent.
01	VOC's	-	-	The factor in both AP-42 and the SC Fire Code are none existent.

FACILITY WIDE EMISSIONS

ID	Pollutant	Uncontrolled Emissions		Controlled Emissions	
		lb/hr	TPY@ 8,760 hours	lb/hr	TPY@ 8,760 hours
Total	PM	156.1	684	156.1	< 100 TPY
Total	PM_{10}	59.04	260	59.04	< 100 TPY
Total	SO_2	2.34	10.29	2.34	< 5.26TPY
Total	NO_x	48.32	211.64	48.32	< 100 TPY
Total	CO	0.1	0.44	0.1	0.44
Total	VOC's	0.02	0.09	0.02	0.09

Note: Facility total include the emission from the small diesel engine that operated the fan motor.

APPLICABLE REGULATIONS

SC Regulations 61-62.5, Standard 1 - Emissions from Fuel Burning Operations

Not Applicable This facility has no fuel burning sources. All sources, dryers, ovens, etc. are direct fired.

SC Regulations 61-62.5, Standard 2 - Ambient Air Quality Standards (AAQS)

Applicable This facility has demonstrated compliance through modeling; see modeling summary April 30, 2002. No operational restriction has been established to ensure compliance with the modeled emission rates.

SC Regulations 61-62.5, Standard 3 - Waste Combustion and Reduction (State Only)

Applicable This process does contains waste combustion or reduction sources. ID-01, the air curtain incinerator is used to incinerate natural wood waste and is subject to this standard as defined in Sections I Part A and Section II Part G Subpart 5. This standard sets a 20% opacity limits for the air curtain incinerator except during startup periods were a 35% opacity level is allowed for the first 30 minutes of the operation of the unit.

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SIC/NAICS CODE(S):	4953/562219		

SC Regulations 61-62.5, Standard 3.1 - Medical Waste Incineration (State Only)
Not Applicable No medical waste incineration.

SC Regulations 61-62.5, Standard 4 - Emissions from Process Industries
Not Applicable This facility does not have either emissions or processes described under this standard. There are no PM allowable emission rates established for Air Curtain Incinerators, and the opacity emissions are described under Standard 3.

SC Regulations 61-62.5, Standard 5 - Volatile Organic Compounds (VOC)
Not Applicable The facility-wide PTE of VOCs is too low to be subject to this regulation. (PTE = 550 lbs/any one day or greater than 150 lbs/any one hour – does not to apply to Part N.)

SC Regulations 61-62.5, Standard 5.1 - Lowest Achievable Emission Rate (LAER) Applicable to Volatile Organic Compounds (State Only)
Not Applicable Currently the facility-wide PTE of VOCs is too low to be subject to this regulation.

SC Regulations 61-62.5, Standard 6 - Alternative Emission Limitation Options (Bubble)
Not Applicable

SC Regulations 61-62.5, Standard 7 - Prevention of Significant Deterioration (PSD)
Applicable The facility's PTE for PM pollutant is greater than 250 TPY; therefore the facility qualifies as major for PSD. However, the facility will be considered a Synthetic Minor and subject Synthetic Minor Emission Limitations of less than 100 tons per year of PM emissions and is avoiding PSD by being below 38,325 TPY for PSD as stated in Standard 3.

SC Regulations 61-62.5, Standard 7, Section II - Prevention of Significant Deterioration (PSD), Ambient Air Limits
Not Applicable There are no baselines established for PM_{10}, SO_2, or NO_x for Horry County.

SC Regulations 61-62.5, Standard 8 - Toxic Air Pollutants (TAPs) (State Only)
Not Applicable This facility does not emit TAPs.

SC Regulations 61-62.6 - Control of Fugitive Particulate Matter
Not Applicable This facility does not have fugitive PM (Dust) emissions.

SC Regulation 61-62.63 - National Emission Standards for Hazardous Air Pollutants: 112(g) (June 28, 1998)
Not Applicable This facility does not emit any HAP emissions.

SC Regulation 61-62.68 (40 CFR 68) - Chemical Accident Prevention Provisions: 112(r)
Not Applicable

SC Regulation 61-62.70 - TITLE V Operating Permit Program
Not Applicable This facility is major for PM, PM_{10}, and NO_x. As such, the following emission sources have taken federally enforceable emissions limitations to be a Conditional Major facility:

OP ID	CP ID	Equipment ID	CP Issue Date	Public Notice Date	PM, PM_{10}, and NO_x Emission Limitation (TPY)	Compliance Method
01	CA	01	May 2002	- On Public Notice	< 100	Monitoring and Record keeping

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SIC/NAICS CODE(S):	4953/562219		

40 CFR 60 - Standards of Performance for New Stationary Sources (NSPS)

Not Applicable This process does not contain sources subject to this standard.

OP ID	CP ID	Affected Source(s)	Equipment ID	NSPS Standard	Reason Not Subject
01	CA	01	01	Subpart Eb	40 CFR §60.50b

40 CFR 61 - National Emission Standards for Hazardous Air Pollutants (NESHAP)

Not Applicable This operation does not emit the pollutants subject to this standard (asbestos, benzene, beryllium, coke oven emissions, arsenic, mercury, radio nuclide, radon, or vinyl chloride).

40 CFR 63 - National Emission Standards for Hazardous Air Pollutants for Source Categories (MACT)

Not Applicable This facility does not emit any HAP emissions.

40 CFR 64 - Compliance Assurance Monitoring (CAM): (April 20, 1998)

Not Applicable This process PTE exceeds Title V threshold limits (PTE >10/25 TPY HAP or >100 TPY criteria pollutants), but the process does not have control equipment associated with it. But the facility is limited to the amount of material that can be burned and limited to less than 100 TPY for criteria pollutants.

Operational Flexibility

Not Applicable

EMISSION LIMITATIONS

ID	Pollutant/ Standard	Limit	Reference Method	Regulation	Periodic Monitoring
01	PM, PM_{10}, NO_x	Less Than 100 TPY	5 & 7	SC Regulation 61-62.1, Section II (G&H)	Record Keeping & Reporting
01	Opacity	20%	9	SC Regulations 61-62.5, Standard 3	Record Keeping

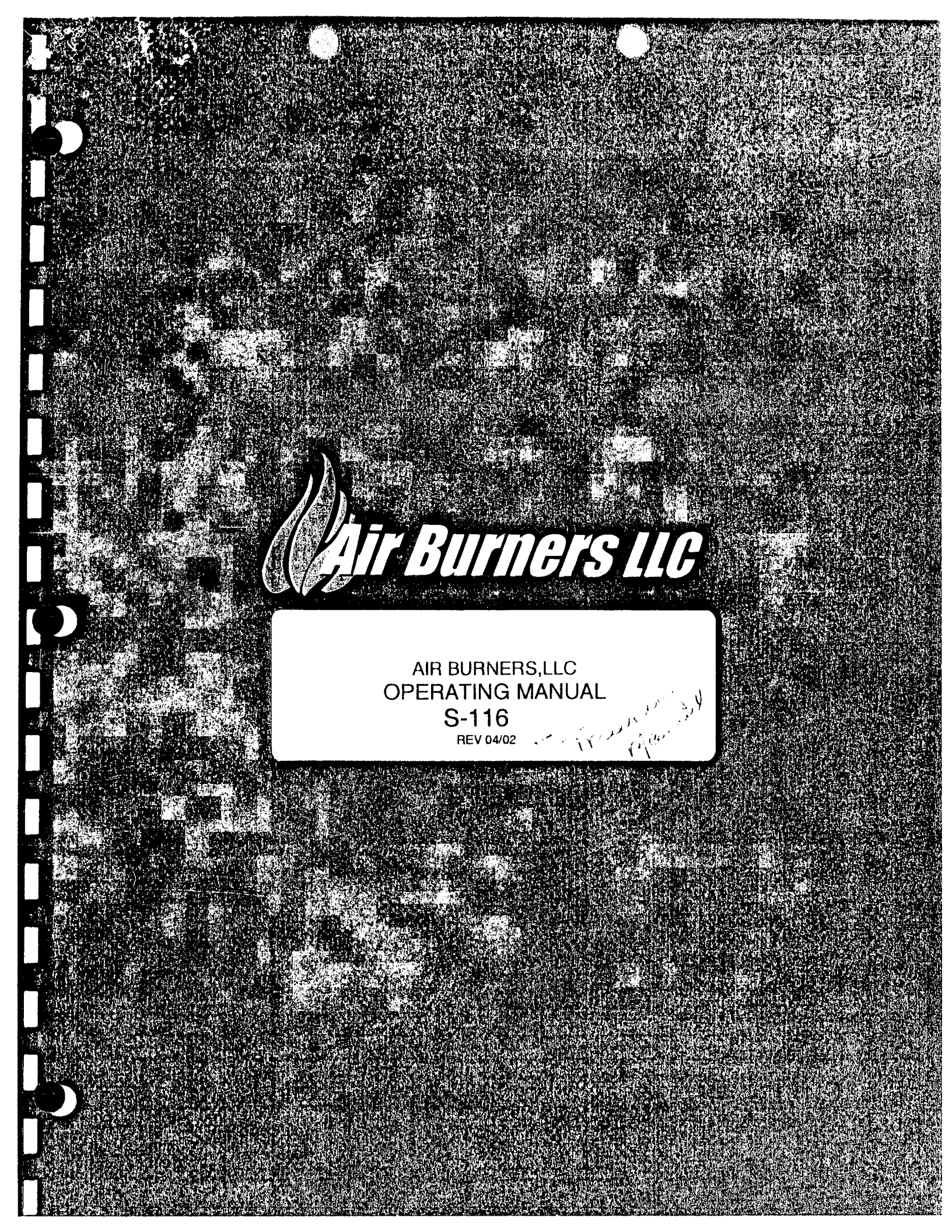
MONITORING AND REPORTING

ID	Pollutant/ Parameter	Limit	Required Monitoring	Monitoring Frequency	Reporting Frequency
01	PM, PM_{10}, NO_x	Less Than 100 TPY	Record Keeping of Type of Material and Amount	Daily	Annual Reporting

SUMMARY AND CONCLUSIONS

It has been determined that this source, if operated in accordance with the submitted application, will meet all applicable requirements and emission standards.

Attachment G



AIR BURNERS,LLC

OPERATING MANUAL

S-116

REV 04/02

Operating Manual

Air Burners
S-Series
S-116

Air Curtain Burners

Self Contained Refractory Walled Air Curtain Burners

"An environmentally friendly alternative"

Visit our Web Site at:
www.airburners.com

US Factory and Main Office
Air Burners, LLC
4390 Cargo Way
Palm City, FL 34990
Phone 772-220-7303 or 888-566-3900
FAX 772-220 -7302
E-mail: **info@airburners.com**

Rev. 04-15-02

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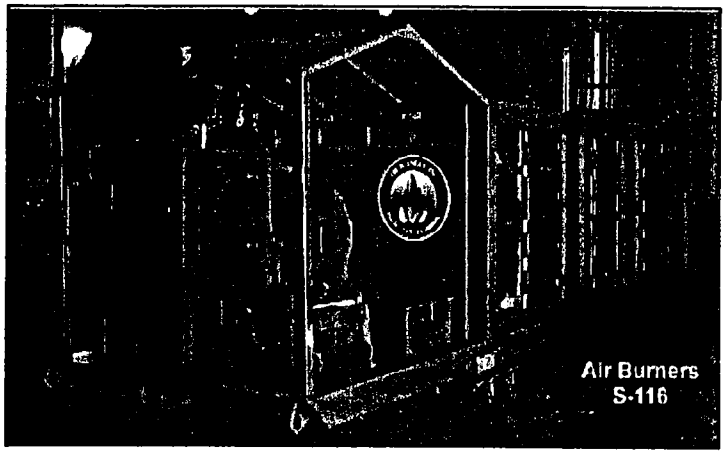
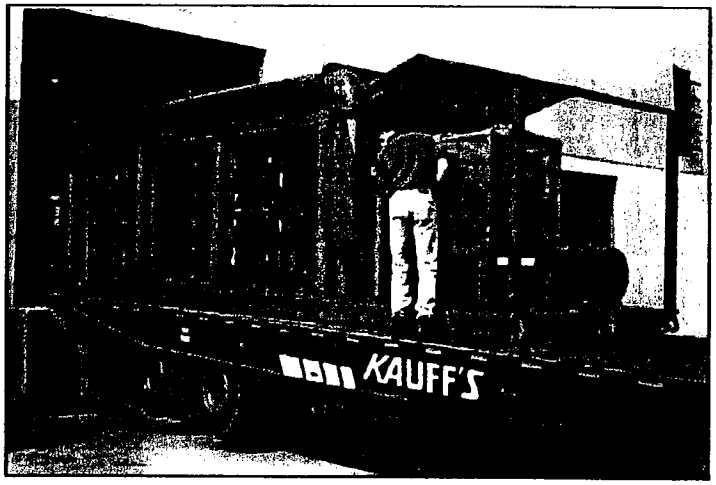
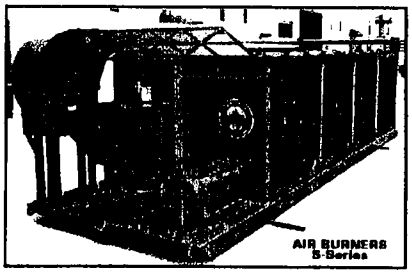


S-116



S-116



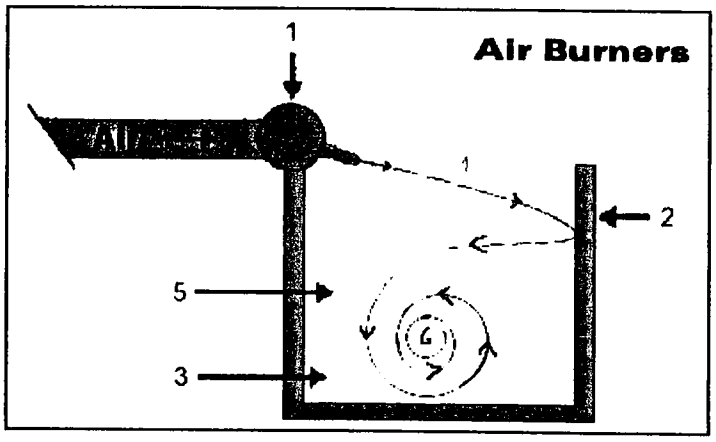
S-127

PRINCIPLE OF AIR CURTAIN INCINERATION

OPERATION

The operating principle of the *air curtain* within an incineration device lies in the introduction of controlled high velocity air across the upper portion of the combustion chamber in which combustibles, such as wood, are loaded. The powerful curtain of air created in this process is actually a rotating mass of high temperature air (2,300°F or 1,260°C, or more) that has been trapped in the chamber. The increased combustion time and turbulence results in complete combustion of the loaded waste and the protective curtain created by the rotating air significantly reduces emissions.

The effective and essentially clean incineration of wood waste is documented in engineering studies and analyses that have been compiled over the years at operating facilities throughout the US.



1. Air curtain machine manifold and nozzles directing high velocity air flow into refractory lined box.
2. Refractory lined wall as on the "S" Series machines.
3. Material to be burned.
4. Initial air flow forms a high velocity "curtain" over fire.
5. Continued air flow over-oxygenates fire keeping temperatures high. Higher temperatures provide cleaner burn and more complete burn.

GENERAL DESCRIPTION S-SERIES

The self-contained refractory walled air curtain system is manufactured as an over-the-road transportable combustion system designed to reduce clean wood waste and vegetative growth to ash in a safe, controlled burning process without excessive particulate emissions.

The standard S-Series machines are offered in several sizes. The smallest is the S-116 (16 ft. fire box) and the largest the S-127 (27 ft. fire box). The table below shows the approximate dimensions.

Air Burners, Air Curtain Incineration Systems: S-Series:

Model	Overall Size L × W × H	Fire Box L × W × H	Weight
S-127	37' 4" × 11' 9" × 10' 3"	27' × 8' 4" × 8' 1"	52,000 lbs.
	11.40 m × 3.78 m × 3.13 m	*8.20 m × 2.50 m × 2.45 m*	*23,600 kg*
S-121	32' 2" × 11' 9" × 10' 3"	21' × 8' 4" × 8' 1"	41,000 lbs.
	9.80 m × 3.78 m × 3.13 m	*6.40 m × 2.50 m × 2.45 m*	*18,600 kg*
S-116	**27' × 7' 5" ×7' 5"**	**16' × 5" × 6"**	**24,500 lbs.**
	8.23m × 2.30m × 2.30m	***4.90m × 1.50m × 1.80m***	***11,150 kg***

Power Plant: Diesel Engine (John Deere Industrial)
Fuel Tank: 100 Gallon (378 L) Diesel Fuel Except **S-116: 30 Gallons (136 L)**
Engine Electrical: 12 Volts DC
Drive System: Mechanical PTO 4-Belt Drive
Except **S-116: Mechanical PTO, Direct Coupling Drive**

NOTES: 1) All weights and dimensions are approximate.
2) If required, dimensional drawings can be provided.

GENERAL DESCRIPTION S-SERIES (Con't)

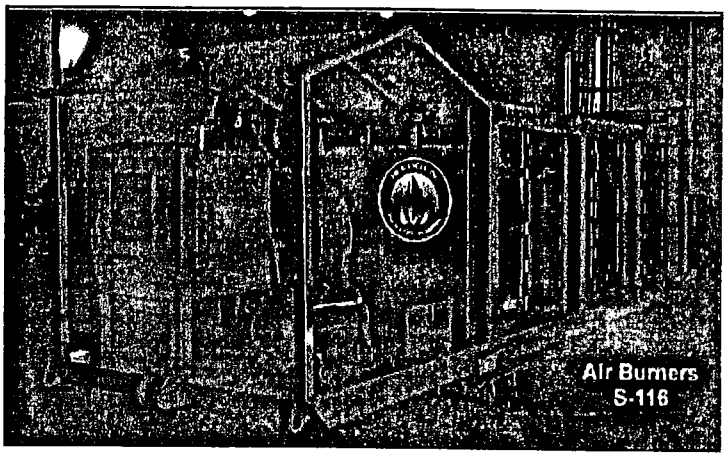
When delivered to a job site, the S-116 machine is ready for use as soon as it is off-loaded. The entire system is built on 10 inch square skids which are designed for easy movement over the ground. The forward equipment deck supports a 4 cylinder Diesel engine, a 30 gallon fuel tank, the direct drive system and the fan. When viewed from the front of the unit, the patented 14" diameter air disbursement manifold is mounted on the left top side of the combustion chamber. The back of the pit is fitted with refractory lined panel doors that, when opened, allow the residual ash to remain on the ground as the bottomless unit is dragged forward. The doors need merely be closed and the unit is ready again.

The Diesel engine, operating at 1,600 to 2,000 RPM is coupled through a direct drive PTO (Power Take-off) that turns the fan. This generates a minimum of 15,000 CFM. The high velocity air is sent down the manifold through the vanes and directed to the outlet nozzles. Air is directed across the top of the box and then reflected down into the combustion zone. The curtain of air acts as a top over the fire box, trapping particulate (small air-born particles) and adding oxygen to the combustion zone thereby generating a hotter more complete fire.

Temperatures achieved by this unit while burning clean wood and vegetative waste range between 1,600°F and 2,800°F.

The air flow coupled with the unique design of the fire box creates a "secondary burn" area just under the air curtain. This secondary burn area increases the "residency" time of the particulate in the highest temperature region of the unit. The higher residency time increases the effective combustion (pyrolysis) resulting in a more complete and cleaner burn.

As a result of the extremely high temperatures and the high velocity air flow directed over and into the fire box at the proper angle, S-Series machines meet or exceed all state and federal emissions limits for air curtain incineration systems.



S-116 Front Deck

S-116 Doors

SAFETY CONSIDERATIONS

The S-Series machine operator is dealing with fire on a daily basis, it is very important that each and every individual involved with the machine be aware of and practice very rigid safety precautions.

When you are running the S-Series Unit, you are responsible for assuring that it is operated in the safest possible manner at all times. If you notice something wrong, correct it immediately, and if you cannot correct it, find someone who can and/or shut down the machine.

Basic Safety Points:

1) **The unit should be placed on cleared, level ground.**

   The unit should be placed on level ground to facilitate loading, dumping and moving of the unit. The rear doors weigh approximately 2000 lbs. each and should not be opened if the unit is inclined on any axis more than 5 degrees.

2) **The unit should be placed such that no combustible material is within a minimum 100 foot clearance in any direction.**

   The S -Series units do not have a bottom and should not be located over combustibles such as dry grass. In addition hot embers will escape from the unit and depending on the wind will land on the ground around the unit. The unit should not be located within 100 feet of any combustible materials.

3) **The unit should not be operated when the wind speeds reach 20 MPH as the potential to carry hot embers is significantly increased.**

   As an operator you should always be aware of wind speed and direction. Increased wind speed will affect the integrity of the "air curtain" and will cause hot embers to travel farther. See the wind speed chart regarding suggested set back on page 6.

4) **NEVER use highly combustible materials to light the unit.**

Highly combustible materials such as gasoline, refined spirits, etc. ignite at an explosive rate which may cause serious injury or death. The safest method to start the fire in the box is to use materials such as paper and kindling wood. In the absence of these materials or when starting materials with a high moisture content diesel fuel oil is an acceptable option.

5) **NEVER climb on the unit to view or light the fire.**

Use a ladder or similar platform located a safe distance from the unit. Do not stand along the rails or on top of the S-Series unit under any circumstance. Falling into the fire box will cause serious injury or death.

6) **Shut the unit down in an emergency.**

Stop loading the unit, stop the air flow by either disengaging the PTO or by shutting down the engine. Dump dirt or sand into the fire box. Water should only be used as a last resort as it will likely damage the refractory panels.

WIND SPEED VS. SAFE DISTANCE

Wind Speed (MPH)	Approximate Safe Distance for: Structures (Houses, etc.)	Woods/Trees	Brush Piles
10	300'	150'	100'
12	300'	150'	100'
14	300'	200'	150'
16	400'	250'	150'
18	400'	250'	200'
20	500'	250'	200'

Note: The above distances serve as a **GUIDELINE ONLY!** You MUST ALWAYS observe the down range area regardless of the wind speed. You must always observe local fire ordinances and directives from the local fire department or other authorities.

HOW TO SET UP THE MACHINE

A) POSITIONING THE UNIT

The S-Series units are totally self-contained and ready to use upon delivery to the job site. The S-Series units are built on a skid base that is designed to facilitate dragging the unit to position it and to move around the site. The use of a front end loader with two cables is all that is needed to facilitate the off-loading from the tilt low-boy transport (or RGN trailer). The weight of an S-116 is approximately 12.5 tons. Ensure any tow cables are certified for towing (dragging) this weight.

With respect to the prevailing wind direction, the unit should be positioned such that the wind comes over the back of the manifold. This is the preferred position. It is also acceptable to have the wind blow into the manifold. It is discouraged, however, to have the wind come from either end of the machine, as this will tend to disrupt the air curtain.

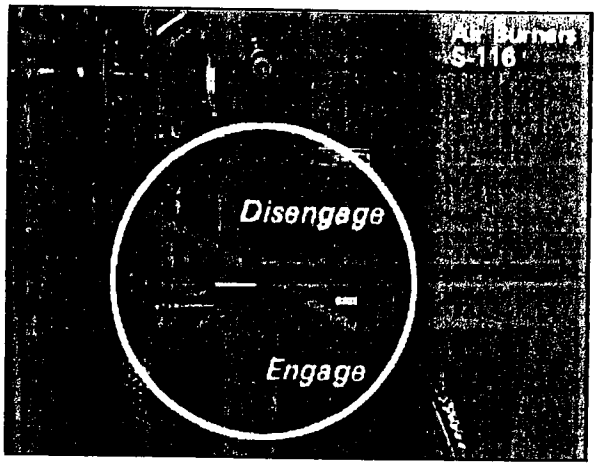
WARNING; When you tow (drag) the S-Series units, especially in soft soil, watch that the dirt does not build up under the panels and lift the panels off the rails. Never walk inside the box when it is being towed. If the rear of the unit sinks in soft soil while towing use another vehicle to follow and carry some of the load.

B)..PRE-OPERATION CHECKS;

1. Air filters (2) for cleanliness **(VERY IMPORTANT!)**
2. Engine oil level
3. Engine coolant level and antifreeze rating
4. Diesel fuel level
5. Fan bearings for set screw tightness and lubrication
6. Battery cable connection (The unit is shipped from the factory with the negative battery lead disconnected)

HOW TO SET UP THE MACHINE (Con't)

C) STARTING



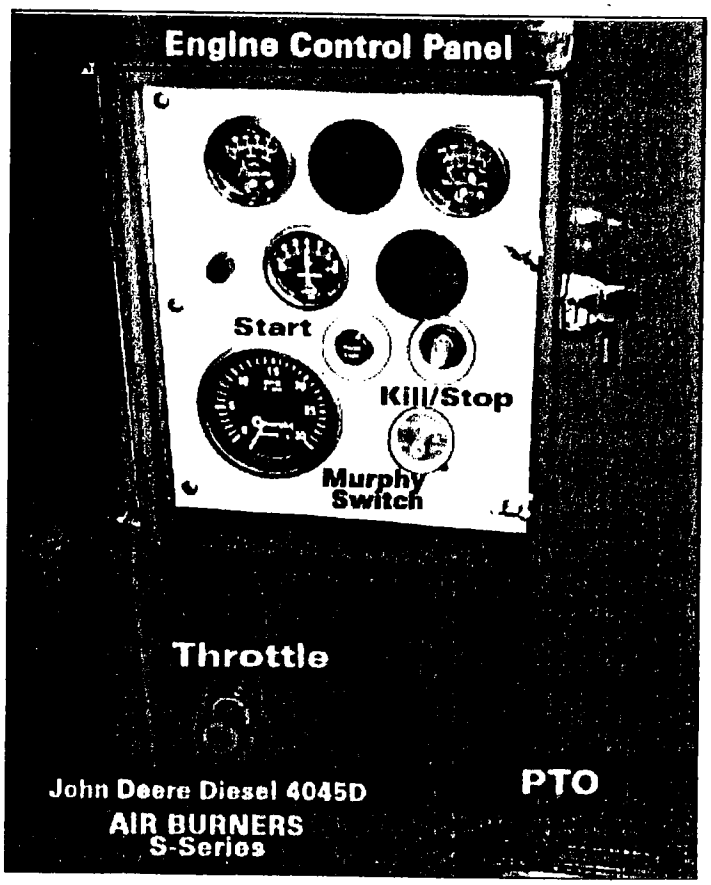
1. First, ensure that the power take off (PTO) or clutch lever is disengaged, that it is in the position pulled all the way up (See picture on right to locate handle).

2. Depress and hold the Murphy switch and push the engine starter button.

3. Increase RPM's to 1,400 and then engage the clutch (PTO) by slowly moving the lever down to bring the fan up to speed, and then lock the clutch (PTO) by pushing the lever all the way down.

   It is very important to start engaging the clutch slowly once 1,500 RPM's have been reached, so as not to stall the engine.

4. Slowly increase the engine RPM's to desired level. Engine RPM's should not exceed 2,000 RPM. Normal operating range is 1,600 to 2,000 RPM.



HOW TO LOAD THE FIRE BOX

THE GOALS IN LIGHTING AN S-SERIES UNIT ARE:

To achieve an even fire across the length of the box.
To start the fire from the bottom of the initial pile.
To build a hot base fire.

1. Unit should be on level ground, the air should be off and the rear doors closed.

2. Load the fire box from the opposite side of the air manifold. This will prevent accidental damage to the manifold.

3. To prevent smoke from escaping under the box, shovel dirt along the bottom edges of the panels. It will only need a couple inches to prevent the smoke from escaping underneath the unit. This is generally only a concern on hard ground and it usually only lasts for the first hour of burning. As burning continues the ash will build up and seal off the bottom of the unit as well.

4. Load *fine material* which is the smaller, dry and clean brush or boards into the bottom of the fire box to a level of about half way up the fire box (3 feet). Ensure the entire bottom area of the fire box is covered.

5. All material placed in the fire box should be tightly packed. Most of it will compress when the second layer of heavy material is added. If there are large air spaces between the deposited waste material, the heat will not build up properly and the fire will be difficult to light.

6. If you are using diesel fuel to assist in the lighting, FIRST INSURE THERE ARE NO HOT COALS REMAINING IN THE UNIT. Spray 10 to 20 gallons across the top of the fine materials.

7. Once you have enough small material in the bottom, begin packing larger material on top, such as logs or stumps. This will become your hot base fire to support continued burning. Use your best and driest materials for startup as this will form a good base for continued burning. If you use stumps on startup it is best to split the first ones so they burn quicker.

8. The level of material in the fire box for light-off should be kept about one foot below the top of the manifold.

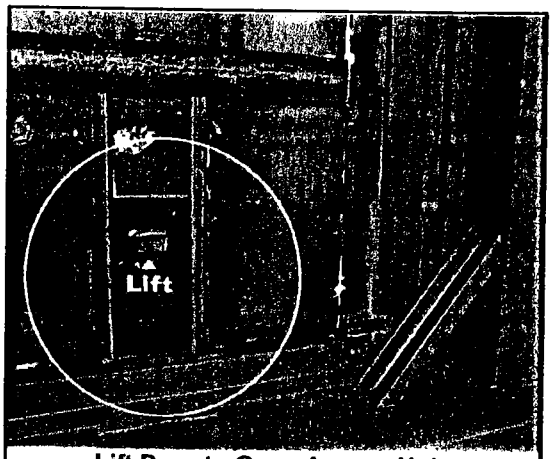
9. If you are using diesel fuel as an igniter it is sometimes helpful to add a second coat to the top load again, INSURE THERE ARE NO HOT COALS REMAINING IN THE UNIT before adding the fuel.

HOW TO START THE FIRE

The goal on start up is to build a hot base fire as soon as possible. There is always smoke on start up as *all* of the material in the box contains moisture, compared to later in the burn operation when only the new material you are loading contains moisture. A high percentage of start up smoke is water vapor.

To minimize *start up* smoke you can:

- Use your driest materials
- Ensure your materials don't retain dirt or sand
- Use diesel fuel to accelerate the light up



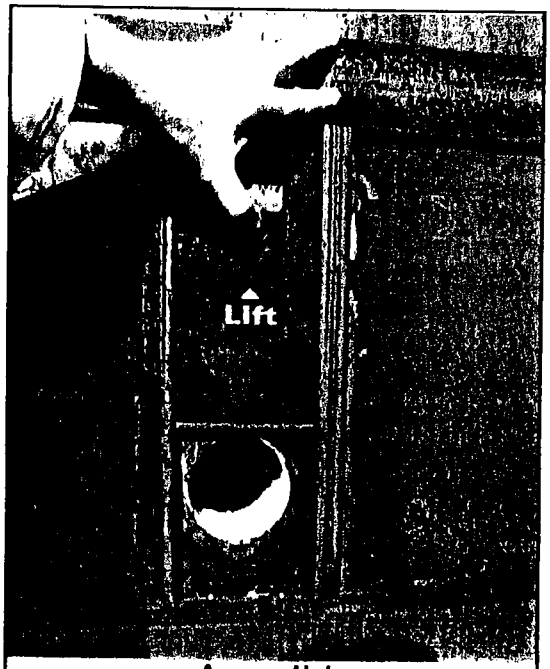
Lift Door to Open Access Hole
(MAKE SURE IT IS NOT HOT)

LIGHTING THE FIRE

1. The air should be off. The engine can be running but the PTO should be disengaged.

2. For best results and quickest light up, start the fire from the bottom. Use a torch or oil soaked rags on poles to light the fire. The fire can be started from under the rear doors and from the access hole in the forward panel on the manifold side of the unit.

3. If you light from the top of the unit use a ladder or platform. **Do not stand on the unit as you may fall in causing serious injury or death.** Use a pole to reach down to the bottom of the material pile.



Access Hole
(DO NOT TOUCH DOOR IF IT IS HOT)

HOW TO START THE FIRE (Con't)

4. If you are using diesel fuel as a starter, let the fire burn until you begin to see wisps of white smoke replacing the wisps of black smoke from the diesel fuel. Then engage the air at approximately 1200 to 1400 Rpm. As the fire burns stronger increase the air (approximately 200 RPM every15 minutes) up to a maximum 2000 RPM.

5. Don't increase the air too quickly as you can "blow" the fire out.

6. If you are lighting the unit without any accelerator (like diesel fuel), follow the precautions in Paragraph 3, using poles under the doors and in the access panel to ignite the fine material. Once you begin to see flames at the top of the box, engage the PTO and bring the air on to approximately 1200 to 1400 RPM.

7. As the fire begins to heat up, increase the RPM's as per paragraph (4).

8. 2,000 RPM's is the maximum you should have to run the engine in order to reach your standard operating temperature.

HOW TO FEED A FIRE

It will generally take 30 to 60 minutes for the fire to build to a point where the temperatures are sufficient for the unit to be operating with minimal smoke.

1. Add material slowly for the first hour. It takes about an hour for the fire to reach maximum temperature. Your goal is to achieve an even fire across the unit.

2. If when you load, especially earlier in the burn operation, you get excessive smoke and ash as you drop the load through the air curtain then you may need to turn the RPM's down from 2000 to 1400 temporarily while you load.

3. Take caution when loading the unit that the material to be burned is not "dumped" into the box too quickly causing hot embers to be thrown from the unit.

4. If you have an area in the box that is smoking, this indicates the temperature is low in that area. Add some dryer smaller material to get the fire burning in this area. Once that area is burning add some of the heavier material.

5. The rate at which you load the unit varies greatly depending on moisture content of the materials and the temperature of the fire. If you overload the box you will notice an increase in white smoke. White smoke is an indication that the temperature is dropping. If the smoke increases stop loading until the fire has built up.

6. The load in the box should not go higher than 1 foot below the manifold. If the materials are piled higher they will begin to break the air curtain and more smoke will escape.

The fire should be loaded continuously throughout the day in order maintain operating temperatures. If the fire is not loaded continuously, the heat will subside which will result in smoke escaping.

HOW TO BURN FIRE DOWN FOR SHUTDOWN

1. All loading should stop between one or two hours before you intend to put the fire out.

2. As the fire burns down, maintain the air speed until the box begins to smoke. As the smoke increases reduce the air speed in increments of about 300 RPM. This will help to reduce the smoke.

3. The air in the manifold needs to flow, both to accelerate the burn-down and to protect the manifold from warping due to excessive heat.

   DANGER:
   DO NOT shut off the air flow while there is still a fire in the fire box. Doing so may cause the elevated temperatures to warp the manifold, nozzle assembly, etc. This will void your warranty.

4. Once the fire has burned down to about one or two feet and there are no flames visible near the manifold it will be safe to shut the engine and air down. Make sure the fire is extinguished before you leave the job site. The best way is to load dirt or sand into the box, **but do not spray the refractory walls with water as this will damage them.**

5. When the burning waste in the fire box is down to a low ash, reduce engine RPM's to idle and disengage the PTO. Push the engine "Kill" button to shut down the engine.

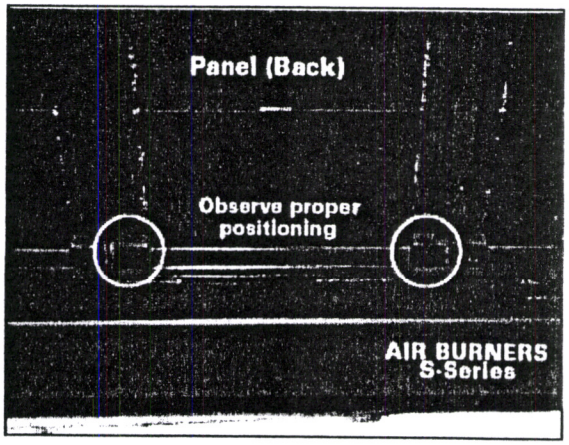
Verify the fire inside is completely out. If it is still burning or smoldering, covering the hot spots with sand will secure the fire box. Ensure the fire is out before you leave the job site.

HOW TO EMPTY THE S-SERIES UNITS

1. The box will operate with up to 3 feet of ash inside, but as the ash gets deeper the efficiency of the unit goes down. Three feet of ash would represent approximately 20 hours of burning. The box should not be run with over 3 feet of ash inside.

2. When the ash level reaches one third the height of the fire box, approximately two to three feet from the ground, it is time to clean out the ashes. One way is to move (drag) the entire unit a short distance. Open the back doors and cover the ash with a thin layer of dirt to minimize fly ash. Connect appropriate cables or chains to the pad eyes or the pull block on the front of the machine and pull the box away from the ash pile that is inside leaving it behind. Wet the ash pile down, remove unburned chunks of wood and then mix the ash into the native soil or otherwise dispose of it.

3. If the box is not going to be moved to dump the ash, you can remove it by driving into the box with a small skip loader type vehicle and scooping the ash out. **Be cautious not to damage the refractory panels.**



Close the doors and the S-Series machine is ready to be fired up again.

TROUBLESHOOTING

1. Fire will not start.

Material in fire box has too much air space. To correct, load heavy material such as stumps to make the lower material pack down. Use torches and light from the bottom so the fire burns up.

2. Fire burning at one end.

Load brush or stumps directly on top of the burning area. This causes the flames to fan out in an effort to reach the top of the pile. As the fire begins to spread, keep material piled on top of the flames until the entire fire box is on fire.

3. Fire smoking too much.

The most common reason for a smoking fire is too much dirt going into the fire box and reducing the heat. You must make sure the wood waste material is free from large amounts of dirt.

You may have overloaded the box or loaded the box too fast. Example; if you only have 1 ton of material burning you can not load in 3 tons of material. The new material will smother the fire.

The material you are loading may have a very high moisture content. You can either load at a slower rate or mix the wetter material with dryer material.

If you are letting the fire burn down or the load in the box is less than 3 feet deep you may need to turn the air down.

4. Smoke from one area of the box

The area is probably not burning well. Add some fine material to the area to help it build the fire. As the smoke clears add heavier material.

5. Smoke from under the base rails or bottom of panels.

Loose dirt was not properly shoveled around inside of box to seal between panel bottoms and the ground. To fix, shovel dirt around the outside where the smoke is escaping. Once the ash inside builds up this will stop.

MAINTENANCE AND CARE OF THE S-116

1. **Daily check list:**

   a. Oil level (top off as needed)
   b. Engine coolant level (top off as needed)
   c. Diesel fuel level in fuel tank
   d. Inspect grease fittings on fan bearings
   e. Tap dirt out of air intake housing and check for excessive dirt. Excessive dirt will require an inspection and cleaning/replacement of the large air filter element to avoid damage to the engine (Repair not covered under your John Deere engine warranty).

2. **Periodic Maintenance (See also John Deere Manual):**

   a. Change oil and filter
   b. Clean/replace fuel filter as needed
   c. Clean and inspect large air filter and replace as needed
   d. Grease both fittings on fan bearings every 2-4 months
   e. Grease PTO per manual
   f. Clean debris off radiator
   g. Check alternator V-belt and adjust as needed

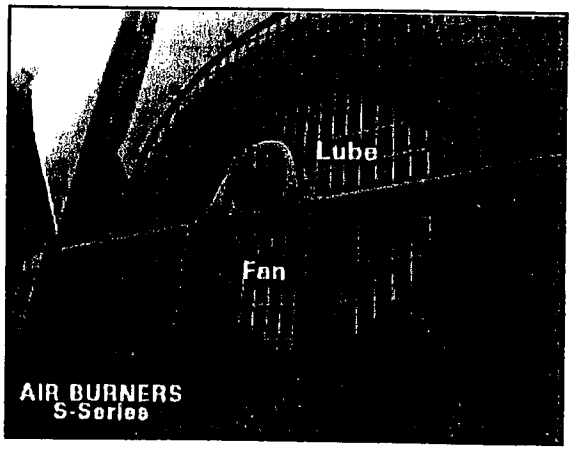
SERVICING SPECIFICATIONS

John Deere 4020D Diesel Engine

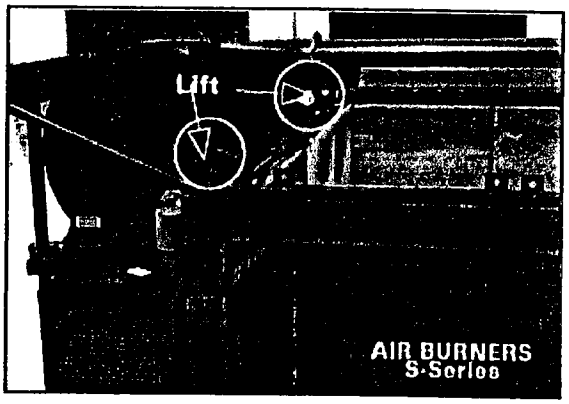
	ID Part No.
Air filter	RG60690
Oil filter	M801209
Fuel filter	T111383
Alternator V-belt	M801821
Engine oil	20W50
Engine coolant	Low silicon anti-freeze

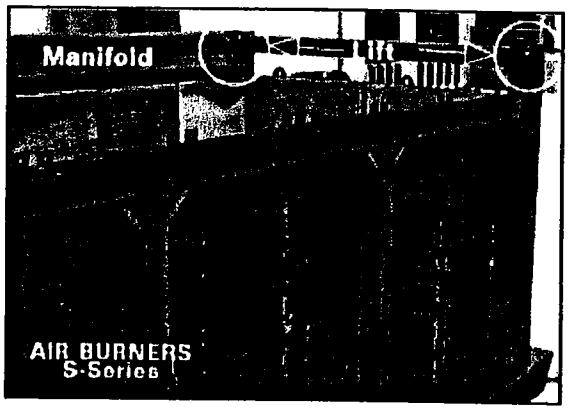
Air Burners Mechanical Fan

Fan bearing lubricant	NLGI Grade 2



LIFTING POINTS





Only lift by the designated lifting pads.
Never lift by the eye pad(s) on top of the manifold. They are for manifold removal/installation only.

Cook, Brittani <cookbd@dhec.sc.gov>

INCP-00015

Koon, Justin <koonjt@dhec.sc.gov> Wed, Dec 5, 2012 at 10:30 AM
To: Brittani Cook <cookbd@dhec.sc.gov>

Hi Brittani,

Attached is the map to be added to the Engineering Report on your desk when you scan it.

If you have any questions, just ask away.

Thanks,

Justin Koon, Engineer Associate
SCDHEC
Solid Waste Permitting Section
Bureau of Land and Waste Management
(803) 896-4067 Phone
(803) 896-4001 Fax

Incinerator Map.pdf
128K